Name:

at1118paper: Complete the Square (v403)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 58x = -837$$

Add $\left(\frac{-58}{2}\right)^2$, which equals 841, to both sides of the equation.

$$x^2 - 58x + 841 = 4$$

Factor the left side.

$$(x - 29)^2 = 4$$

Undo the squaring. We need to consider both $\pm\sqrt{4}$.

$$x - 29 = -2 \quad \text{or} \quad x - 29 = 2$$
$$x = 27 \quad \text{or} \quad x = 31$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 28x = 128$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 56x = -775$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 40x \;=\; 441$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 50x \;=\; -429$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 + 22x \;=\; 455$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 46x \;=\; -528$$